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Enhancement of photon momentum anisotropies during the late stages of relativistic heavy-ion collisions

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We present a consistent photon production calculation from hadronic cross sections, including bremsstrahlung and 2-to-2 reactions, matching the usually employed thermal rates [1]. Using the hadronic transport approach SMASH as the afterburner for the hadronic stage at RHIC and LHC energies, we find a significant increase in the calculated momentum anisotropies of these photons due to microscopic non-equilibrium dynamics. This enhancement is found in comparison to standard calculations, which rely on the folding of equilibrium rates to a hydrodynamical evolution. Once combined with photons produced above the particlization temperature in the hydrodynamical evolution, the differences between the two approaches are modest regarding $p_\perp$-differential spectra, but are clearly noticeable at low $p_\perp$ for the elliptic flow: non-equilibrium dynamics enhance the photon v_2 below $p_\perp \approx 1.5$ GeV.

[1] A. Schäfer, O. G-M., J-F. Paquet, H. Elfner, and C. Gale. arXiv: 2111.13603

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